

HFM650 Gear Flowmeter



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Overview

Gear Flowmeter, also known as PD Flowmeter (positive displacement flowmeter), referred to as volumetric flowmeter, is a relatively high-precision type of flow meter.

HFM650 gear flowmeter uses the pressure difference between the inlet and outlet when the liquid passes through the flowmeter cavity to push a pair of gears into mesh. The two precisely matched gears are enclosed in a precision-machined cavity. The tooth root of each gear is in contact with the measurement cavity. Experience the formation of volumetric cavities with equal volumes. The liquid is divided into individual known standard volume portions by gear rotation. The total volume of liquid is measured based on the number of times a volume chamber is filled and drained of that volume of liquid, successively and repeatedly.

Application

It can measure liquids processed by all available pumps (centrifugal pumps, peristaltic pumps, diaphragm pumps, etc.) and that have lubricating properties. For example: diesel, lubricating oil, hydraulic oil and other lubricating greases. For example:

- ◆ Automobile industry
 - Braking system test bench engine fuel consumption measurement filled with polyurethane foam.
 - New energy engine system coolant monitoring
 - paint spraying system.
 - Steering system (dosing and filling of engine oil, brake fluid, antifreeze, and anti-corrosion
 - Adhesive coating for windshields, hoods, etc.
- ◆ Hydraulic
 - Volume and flow rate measurement
 - Leak monitoring.
- ◆ Dosing and filling
Monitoring of A and B two-component and mixing ratio
- ◆ Chemical Industry
 - Mixing and filling
 - Filling of hydrofluoric acid and highly corrosive chemical materials
 - Reactor dripping
- ◆ Measurement and control of high-viscosity products
Asphalt, ink, honey, syrup.
- ◆ Air conditioning industry
Refrigerant R143a

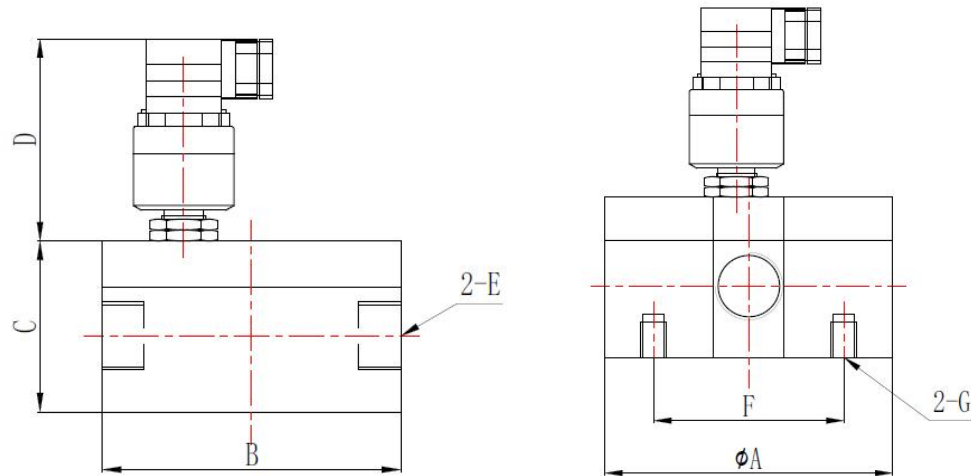
Features

- ◆ High measurement accuracy and high repeatability ($\pm 0.5\%$ of reading value, 0.1% repeatability)
- ◆ High and low temperature resistance ($-196^{\circ}\text{C}\sim 200^{\circ}\text{C}$) (for high and low temperature customization, please contact sales).
- ◆ Range ratio wide 1:150
- ◆ High resolution (10~16P/rpm)
- ◆ Multiple signal output types (pulse, analog, RS485 and Hart)
- ◆ Can measure highly corrosive liquids (sulfuric acid, hydrofluoric acid, etc.)
- ◆ Can measure high viscosity media (syrup, asphalt, honey, etc.)

Technical Parameters

Measuring Medium	Liquid
Implementation standards	JB/T9242-2015 General technical conditions for liquid volumetric flow meters
Medium viscosity	5~500mm ² /s
Ambient temperature	-40~85 ^o C
Medium temperature	-40~80 ^o C , high temperature type 200 ^o C (customized)
Pressure	Aluminum 50bar/stainless steel 100bar (high pressure can be customized to 400bar)
Accuracy	+/-0.5% of reading (within 1:20 range), +/-1% of reading (full range) *Data above is based on 20cst viscosity liquid)
Repeatability	+/-0.1% of reading
Power supply	9~26VDC(default), 220VAC can be customized
Output signal	Analog (4-20mA, 1-5V or 2-10V), Pulse frequency 5Khz (Max)
Explosion-proof level	Exd II CT6 Gb
Protection level	IP65
Communication method	RS485 Modbus-RTU /HART/ GPRS /Bluetooth
Electrical Interface	M20*1.5 (with metal explosion-proof connector)
Material - Housing	1.4305(SS304),1.4144(SS316L) or Al
Material – Gears	SS304, SS316L or high hardness alloy steel
Material – Bearing	Rolling or plain bearings
Material – Seals	FKM, NBR or PTFE
Flange	GB, DIN, JIS customize
Accessories(optional)	male and female thread adapter, Ermeto connector, sanitary clamp connector

Structure Drawings (Unit: mm)



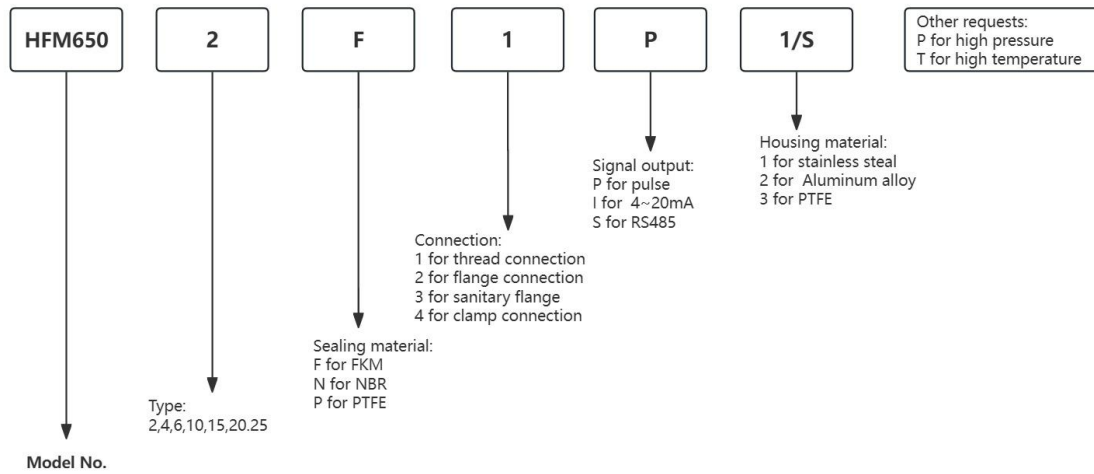
Sensor port code	A	B	C	D	E	F	G	H
2	Φ83	80	55	70	G1/4	40	M6	16
4	Φ83	80	55	70	G3/8	55	M6	16
6	Φ83	80	62	70	G1/2	55	M6	14
10	Φ83	80	62	70	G1/2	55	M6	14
15	Φ113	110	65	70	G3/4	90	M6	28
25	Φ158	140	85	70	G1	110	M8	40
32	Φ218	160	100	70	G1-1/4	180	M8	45

* For other sizes, please consult the sales.

Performance

Sensor port code	Measuring range(l/h)	L(P/L)	Pressure (Bar)		Interface	Filter diameter(um)	
			SS304	Al		rolling bearing	Sliding bearing
02	0.6~50	11200	50	16	G1/4	20	40
04	5~250	4780	50	16	G3/8	20	40
06	10~500	3468	50	16	G1/2	20	40
10	20~1200	2780	50	16	G1/2	20	40
15	200~3000	334	50	16	G3/4	20	150
25	1000~12000	110	50	16	G1	100	150
32	2000~20000	40	50	16	G1-1/4	100	150

Ordering Guide



Accessories

24V/5V Pulse transmitter



Power supply	9~26VDC
Output	Square wave pulse (NPN and PNP push-pull output)
Ambient temperature	-40~80°C
Electrical Interface	M12*1
	Hirschmann
	M20*1.5 Metal explosion-proof
Power supply reverse connection protection	With
No-load current	3mA
Protection level	IP65

Pulse transmitter for high temperature medium



Power supply	9~26VDC
Output	Square wave pulse (NPN and PNP push-pull output)
Sensor working temperature	-40~120°C
Ambient temperature	-40~80°C
Electrical Interface	M12*1
	Hirschmann
	M20*1.5 Metal explosion-proof
Power supply reverse connection protection	With
No-load current	3mA
Protection level	IP65

Current or voltage output transmitter



Power supply	9~26VDC
Output	4~20mA
	1~5VDC or 2~10VDC
Sensor working temperature	-40~140°C
Ambient temperature	-40~80°C
Electrical Interface	M12*1
	Hirschmann
	M20*1.5 Metal explosion-proof
Power supply reverse connection protection	With
No-load current	current output: 8mA
	voltage output: 10mA
Protection level	IP65

Current or voltage output transmitter for high temperature medium



Power supply	9~26VDC
Output	4~20mA
	1~5VDC or 2~10VDC
Sensor working temperature	-40~200°C
Ambient temperature	-40~80°C
Electrical Interface	M12*1
	Hirschmann
	M20*1.5 Metal explosion-proof
Power supply reverse connection protection	With
No-load current	current output: 8mA
	voltage output: 10mA
Protection level	IP65

Digital display transmitter (one analog, two switch signal outputs)



Power supply	9~26VDC
Output	4~20mA 3-wire
	2-way switch(relay)
	Pulse (push-pull output, 3-wire)
Sensor working temperature	-40~120°C
	-40~200°C (with cooling fin)
Ambient temperature	-40~80°C
Electrical Interface	M12*1 (with 2-meter cable)
Display	LCD
Resolution	0.001
Power supply reverse connection protection	With
No-load current	current output: 20mA
Accuracy	±0.5%
Repeatable	0.1%
Housing material	SS304
Protection level	IP65

LCD 4-button digital transmitter



Power supply	9~26VDC
Output	4~20mA (2-wire,3-wire, or 4-wire)
	Pulse (push-pull output, 3-wire)
	2 way switch (high low flow alarm, relay)
Communication method	RS485 /Modbus-RTU
Sensor working temperature	-40~200°C
Ambient temperature	-40~80°C
Electrical Interface	M12*1 (with 2-meter cable)
Display	LCD
Resolution	0.001
Power supply reverse connection protection	With
No-load current	current output: 20mA
Accuracy	±0.5%
Repeatable	0.1%
Housing material	SS304
Protection level	IP65

LCD 4-button digital transmitter for high temperature medium



Power supply	9~26VDC
Output	4~20mA (2-wire,3-wire, or 4-wire)
	Pulse (push-pull output, 3-wire)
	2 way switch (high low flow alarm, relay)
Communication method	RS485 /Modbus-RTU
Sensor working temperature	-40~140°C
Ambient temperature	-40~80°C
Electrical Interface	M12*1 (with 2-meter cable)
Display	LCD
Resolution	0.001
Power supply reverse connection protection	With
No-load current	current output: 20mA
Accuracy	±0.5%
Repeatable	0.1%
Housing material	SS304
Protection level	IP65